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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY-DOCKET NO.	CONFIRMATION NO.
09/821,002	03/29/2001	Jianqin Wang	NEC F-10850	8523

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Attn: Norman P. Soloway
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GROSSMAN & HAGE, P.C.
175 Canal Street
Manchester, NH 03101

EXAMINER

NGUYEN, DUC M

ART UNIT	PAPER NUMBER
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2685

DATE MAILED: 02/20/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/821,002

Applicant(s)

WANG, JIANQIN

Examiner

Duc M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 29 March 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2, 4, 5, 6.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 3/29/01, 11/26/02, 2/19/03 and 8/6/03 have been considered by the examiner.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims **1, 5-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Graham** (EP 0849873 A1) in view of **Staudinger** (US 5,339,462).

Regarding claims **1, 9**, **Graham** discloses an image rejection mixer (see Fig. 1 and col. 2, lines 35-47), which comprise,

- distribution means with local signals as claimed (see Fig. 1, refs. 3, 4);
- first and second mixing means as claimed (see Fig. 1, refs. 1, 2);

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- first and second phase shift means as claimed (see Fig. 1, refs. 5, 6);
- addition means as claimed (see Fig. 1, ref. 7);
- remove image signal as claimed (see col. 2, lines 45-47).

However, **Graham** is silence on whether the output signal from mixers is the IF signal. However, it would have been obvious to one skill in the art that such image rejection mixer could be applied to a super-heterodyne receiver as taught by Staudinger for producing an output IF signal as well (see Fig. 3), for utilizing advantage provided by super-heterodyne receiver such as fixed IF frequency, for stability purpose.

Regarding claim 5, it is rejected for the same reason as set forth in claim 1 above. In addition, Graham discloses the addition means comprises a differential amplifier (see Fig. 4 and col. 1, lines 30-37).

Regarding claim 6, it is rejected for the same reason as set forth in claim 1 above. In addition, since Staudinger discloses matching circuits (impedance matchings) between the mixers and phase shift circuits (see Fig. 3, refs. 220, 224, col. 7, line 61- col. 8, line 2), it would have been obvious to one skill in the art to further incorporate Staudinger's teaching to Graham for providing impedance matching circuits as claimed (i.e, when the impedance of the mixers and phase shifts are different from each other), for stability purpose (prevent oscillations).

Regarding claim 7, it is rejected for the same reason as set forth in claim 1 above. In addition, Staudinger discloses the impedance comprises a resistor, an inductor or a capacitor as claimed (see Fig. 7B).

Regarding claim **8**, it is rejected for the same reason as set forth in claim 1 above. In addition, it would have been obvious to one skill in the art that the values of impedance in matching circuits 220, 224 in Staudinger are determined based on impedance mismatch between the mixers and phase shifts. Since the impedance is a complex number which includes an amplitude and a phase angle, thereby these values should also be determined based on their phase different as well. Therefore, the claimed limitations are made obvious by Graham and Staudinger for determining impedance values as claimed, in order to calibrate or compensate for phase errors.

4. Claims **2-4** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Graham** in view of **Staudinger** and further in view of **Law** (US 5,303,417).

Regarding claim **2**, it is rejected for the same reason as set forth in claim 1 above. In addition, although Graham discloses the phase shift of the lattice circuit comprises R-C element, it is noted that a phase shift circuit which comprises any combination of R, L, C elements is well known in the art as disclosed by **Law** (see Fig. 10 and col. 4, lines 15-18). Therefore, it would have been obvious to one skill in the art to incorporate Law's teaching to Graham and Staudinger for provide an L-R phase shift circuit as claimed, for reducing power dissipation of the phase shift circuit.

Regarding claims **3-4**, they are rejected for the same reason as set forth in claim 1 above. In addition, since Law further discloses a feedback loop to control the phase shift circuit error (see Fig. 11 and col. 4, lines 19-29), it would have been obvious to

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one skill in the art to further incorporate Law's teaching to Graham and Staudinger for provide a feedback loop as claimed, for correcting errors of the phase shift circuit.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sakashita et al (US Pat No. 4,677,692), Frequency conversion apparatus.

Mourant (US Pat No. 6,687,494), Low power radio telephone image reject mixer.

Nader (EP 1024590), Frequency translation circuitry.

2. **Any response to this action should be mailed to:**

Commissioner of Patent and Trademarks

Washington, D.C. 20231

or faxed to:

703-872-9314 (for formal communications intended for entry)

(for informal or draft communications, please label PROPOSED or DRAFT)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc M. Nguyen whose telephone number is 703-306-

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4531. The examiner can normally be reached on Monday-Thursday (9:30 AM – 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Duc M. Nguyen
Feb 20, 2004

